Biopower opportunities in government facilities[1]

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Increasingly, there is a realization that governmental entities have an obligation to act in an environmentally responsible manner and, due to their sheer size and political power, it is believed that they can exert pressure to influence the marketplace for the acceptance of new technologies. For example, the Federal government is the single largest user of energy in the United States with approximately $8 billion in annual energy-related purchases. Executive Order 13123, "Greening the Government through Efficient Energy Management," (signed in June 1999) encouraged the increased use of renewable energy such as solar, wind, and biomass by Federal agencies. More specifically it stated that, "...each agency shall strive to expand the use of renewable energy within its facilities and in its activities by implementing renewable energy projects and by purchasing electricity from renewable energy sources."

A number of Federal and other government facilities are beginning to participate in "green pricing" programs – an optional service that allows customers an opportunity to pay a premium on their electric bill to cover the extra cost of the renewable energy technology investments made by the utility or power supplier. The Environmental Protection Agency (EPA) became the first Federal agency to convert one of its facilities to 100 percent renewable energy when it selected the Sacramento Municipal Utility District's "Greenergy" product to power its Richmond, California research laboratory. The first competitive purchase of renewable energy by Federal agencies in the Eastern U.S. involves the Liberty Bell facility and seven other Federal government accounts in Pennsylvania that will be powered by EcoChoice (a 100 percent renewable energy product) provided by the Energy Cooperative Association of Pennsylvania. Numerous municipalities have also contracted to purchase green power. For example, the Los Angeles City Council recently approved a plan to meet about 10 percent of the city's electricity needs with power generated from new renewable resources, representing one of the largest municipal green power purchases in the country. (Many of these green power purchases include a biopower component, albeit primarily landfill gas.)

Despite these promising developments, the additional cost premium of green power programs could serve as a hindrance to their market penetration. For example, green power adoption by the EPA Richmond facility resulted in a 10 percent increase in the cost of power. Thus, biopower and other renewable technologies may not be viewed as an attractive power source and could be rejected by some government facility managers as a green power source due to their relatively high cost, given the emphasis on savings expounded by the Executive Order on Greening the Government, which emphasizes savings to taxpayers.

However, a number of creative measures are being taken to surmount this obstacle. One approach is to offset the higher cost of renewable premiums with energy efficiency improvements that result in a "revenue neutral" approach to generating or purchasing green power. For example, the Federal Energy

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[1]This paper builds on previous research presented in the companion "Expanding Public Markets for Green Power: Can Biopower Play an Enhanced Role?" by Janine Finnell, Nicole Palko, and Karen Clark, Technology & Management Services, *Conference Proceedings–Bioenergy 2000*, Buffalo, New York, October, 2000.

Management Program (FEMP) has awarded a series of nationwide energy savings performance contracts (ESPCs), which are designed to reduce the cost of energy in Federal buildings without capital investment by the building owner. Typically, the terms of such contracts provide for contractor purchase, installation, and maintenance of energy conservation measures with a guarantee of annual energy cost savings in exchange for a share of such savings. A solicitation concerning biomass energy was recently issued by FEMP seeking energy management services to reduce energy consumption and/or energy costs (including related operations and maintenance costs) at Federal facilities in combination with the use of biomass or alternate methane fuel (known as BAMF) systems. FEMP has also identified numerous landfills and wastewater treatment plants located within close proximity to over 70 Federal facilities that could potentially provide a methane source.

Another strategy being used to reduce the cost of green premiums is called "load aggregation," in which consumers combine their purchasing power and buy electricity in bulk from a single provider to reduce costs. The City of Chicago, for example, has pooled its purchase of power with 47 other local government bodies with the specific requirement that 20 percent of the power provided – 80 MW out of 400 MW – come from renewable energy resources by 2005.

In addition, the Department of Energy Biopower Program is examining the potential use of a number of modular and cofiring biomass conversion technologies at public facilities. This DOE program currently has an interagency agreement with the EPA to collect data on the feasibility of a modular gasification turbine system that will provide power for Camp Lejeune, North Carolina. This program is also collaborating with the Northeast Regional Biomass Energy Program to identify government facilities that are appropriate sites for converting their heating, cooling, and power generation to biomass-based systems. The DOE Biopower Program is also considering the use of a modular power system at the United States Department of Agriculture's research station in Beltsville, Maryland using an anaerobic digester coupled to a gas turbine.

This paper examines the potential to expand the use of green power, specifically with a biopower component, at Federal and other public facilities. It examines creative ways to finance these programs and discusses ongoing Federal efforts to increase the utilization of biopower